

# Nanostructured Catalytic Reactors for Air Purification, Phase II

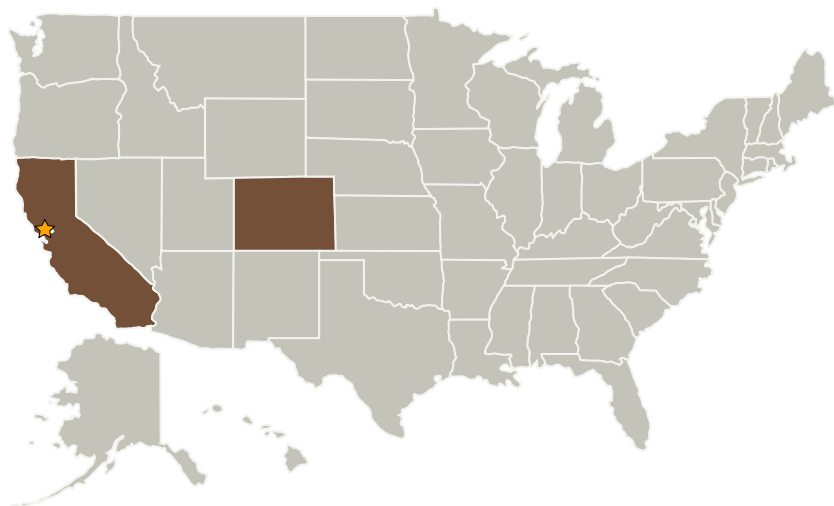
Completed Technology Project (2008 - 2011)



## Project Introduction

This SBIR Phase II project proposes the development of lightweight compact nanostructured catalytic reactors for air purification from toxic gaseous organic pollutants, particulate matter, and microorganisms. Volatile organic chemicals (VOCs) will be catalytically oxidized inside high-density arrays of uniform cylindrical nanopores that comprise the reactor. The nanopores of the catalytic substrate are conformally coated with appropriate catalyst, forming ultra-high aspect ratio, high surface area, cylindrical nanoreactors. Such unique architecture provides improved mass and heat transfer and ensures conversion of volatile organics into non-toxic products with unmatched efficiency. The proposed low-mass, low-volume and low-power-consumption reactors are intended to replace conventional packed-bed catalytic oxidizers used currently for removal of trace organic contaminants from spacecraft atmospheres. The Phase I project unequivocally demonstrated the feasibility of VOCs oxidation and confirmed the strong competitive advantages of the proposed architecture over conventional reactors and structured catalysts. The Phase II goal now is to develop, fabricate and validate nanochannel reactor prototypes, and to initiate their integration into air purification modules. The expected result is commercially viable, low-cost, compact yet highly efficient and robust nanochannel reactors for air purification.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Ames Research Center (ARC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Synkera Technologies, Inc.	Supporting Organization	Industry	Longmont, Colorado

## Primary U.S. Work Locations

California	Colorado
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## Project Transitions

 **February 2008:** Project Start **April 2011:** Closed out

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

## Technology Areas

**Primary:**

- TX06 Human Health, Life Support, and Habitation Systems
  - └ TX06.4 Environmental Monitoring, Safety, and Emergency Response
    - └ TX06.4.4 Remediation